

REMARKS

The office action of December 24, 2009, has been carefully considered.

It is noted that claims 1, 4, 5, 8-15 and 22 are rejected under 35 U.S.C. 103(a) over the patent to Glass in view of the patent application of Jones.

Claims 2, 3, 16, 17, 20 and 21 are rejected under 35 U.S.C. 103(a) over Glass in view of Jones, and further in view of the patent to Tyszblat.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) over Glass in view of Jones, and further in view of the patent to Kondo.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) over Glass in view of Jones, and further in view of Tyszblat and the patent to Franek.

In view of the Examiner's rejections of the claims, applicant has canceled claims 2, 3 and 22-39, amended claims 1, 11 and 16-

20, and added new dependent claims 40-44. Support for the steps of amended claim 1 can be found as follows in the originally filed application: pressing of ZrO₂, page 7, lines 21-23, page 12, lines 19-22 and lines 32-36, and page 20, lines 11-25; presintering, page 5, lines 11-12; infiltration under vacuum, page 5, lines 14-16; sintering in a densifying manner, page 5, lines 7-19; and shaping to form the dental restoration, page 12, lines 6-9, page 14, lines 6-14 and lines 28-30.

Support for new claims 40-44 can be found as follows: claim 40, page 7, lines 22-25; claim 41, page 20, line 21; claim 42, page 14, lines 6-8 and 28-30; claim 43, page 21, lines 9-12; and claim 44, page 21, lines 9-16.

It is respectfully submitted that the claims presently on file differ essentially and in an unobvious, highly advantageous manner from the methods disclosed in the references.

At the time of the filing of the present application, the convention manner of producing a translucent dental restoration part required that the restoration part be produced from hot-isostatically pressed zirconium oxide.

The production of such restoration parts from cold isostatic or uniaxial pressing and partially densely sintered blanks does lead to a reduction of the production time, however with the additional pressureless dense sintering, appreciable losses in the translucence result. These disadvantages of the limited translucence were and are a characteristic of a pressureless, densely sintered material such as ZrO_2 , and arise when working is carried out after the dense sintering.

A hot-isostatic dense sintering of already shaped, still more porous restoration parts is practically not viable because for this process special mass-precise deformable holders must be used. Only after the pressureless dense sintering of porous restoration parts can an additional HIP-process be used in order to obtain translucent dental restoration parts.

The present invention has the objective of avoiding the disadvantages of hot-isostatic pressing. The present invention present invention accomplishes this with the steps of:

producing an open-pore blank of ZrO_2 powder;
presintering the blank;
infiltrating, under vacuum, with an infiltration substance;
sintering the blank in a densifying manner to create a blank

with a translucent core; and

shaping the blank to form the dental restoration by milling and/or etching to remove the outer infiltration substance layer.

Turning now to the references and particularly to the patent to Glass, it can be seen that this patent discloses an infiltration process for introducing additional phases for multiple materials. Glass does not teach producing a material with a retentive pattern, nor is there any teaching of etching the surface of the part with acid, as in the presently claimed invention. Furthermore, Glass does not deal with a material for use in the dental field. Therefore, a person skilled in the art of materials useable in the dental field would not look to Glass since there is no indication that the material of Glass can fulfill the many requirements of a dental material, such as having a biaxial strength of no less than 800 MPa. In contrast, in example 1 of Glass there is a strength of 723-837 MPa, and in example 2 a strength of only 355-555 MPa. Furthermore, Glass does not teach a translucent material. From reading Glass, one skilled in the art would readily appreciate that the material described therein would not fulfill the requirements of a dental material. Thus, one skilled in the art of dental restoration parts would not look to the teachings of Glass for any suggestions for producing a

suitable material.

Jones et al. disclose a composite veneered cast glass-ceramic dental construct. The Examiner combined Jones et al. with Glass in determining that claims 1, 4, 5, 8-15 and 22 would be unpatentable over such a combination. The Examiner relies on Jones et al. for the teaching of etching to achieve a retentive pattern. This feature has been removed from claim 1. Thus, Jones et al. add nothing to the teaching of Glass so as to suggest the presently claimed invention.

In view of these considerations it is respectfully submitted that the rejection of claims 1, 4, 5, 8-15 and 22 under 35 U.S.C. 103(a) over a combination of the above-discussed references is overcome and should be withdrawn.

The patent to Tyszblat discloses a completely ceramic dental prosthesis. Tyszblat does not use ceramic materials as used in the present invention. For example, no oxide ceramics are used, but rather exclusively alumina/magnesia spinel. Such spinels have a completely different molecular structure than the oxide ceramics of the presently claimed invention. For infiltration, only lanthanum glass is used in a liquid state (see col. 3, lines 44-

50), which is very far from the room temperature used in the present invention.

The Examiner combined Tyszblat with Glass and Jones in determining that claims 2, 3, 16, 17, 20 and 21 would be unpatentable over such a combination. Applicant respectfully submits that one skilled in the art would not combine the teaching of these references and even if combined they do not teach the invention recited in amended claim 1 now on file.

In view of these considerations it is respectfully submitted that the rejection of claims 2, 3, 16, 17, 20 and 21 under 35 U.S.C. 103(a) over a combination of the above-discussed references is overcome and should be withdrawn.

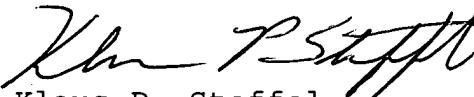
The patents to Kondo and Franek have also been considered. Applicant submits that these references add nothing to the previously discussed references so as to suggest the presently claimed invention.

In view of these considerations it is respectfully submitted that the rejections of claims 18, 19, 23 and 24 under 35 U.S.C. 103(a) are overcome and should be withdrawn.

Reconsideration and allowance of the present application are respectfully requested.

Any additional fees or charges required at this time in connection with this application may be charged to Patent and Trademark Office Deposit Account No. 11-1835.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450 Alexandria, VA 22313-1450, on April 26, 2010.

By: 
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